What is claimed is:

1. An automatic tissue sampling apparatus for use with a biopsy needle set of the kind including an inner needle having a first hub disposed at one end and a cutting point disposed on an opposite end with a tissue holding notch positioned between the cutting point and the first hub and an outer cannula having a second hub at one end and a cutting point disposed at the opposite end, the automatic tissue sampling apparatus comprising:

a housing having a forward portion adjacent a forward end and a rearward portion adjacent a rearward end with a transverse wall disposed between said forward region and said rearward region;

a rotatable center shaft disposed within said housing along a longitudinal axis of said housing;

a rearward carrier assembly configured to receive and carry one of the needle hubs, said rearward carrier assembly including

a rearward carrier mounted on said center shaft in said rearward portion and movable along a path substantially parallel to said longitudinal axis of said housing between a first resting position and a first cocked position;

a rear spring member positioned within said rearward region of said housing and biasing said rearward carrier forwardly toward said first resting position; and

a rearward retaining member configured to releasably retain said rearward carrier in the cocked position, said rearward retaining member releasable in response to a trigger operatively engaged to said rearward retaining member;

a forward carrier assembly configured to receive and carry the other of the

needle hubs, said forward carrier assembly including

a forward carrier mounted on said center shaft within said forward portion and movable along a path substantially parallel to a longitudinal axis of said housing between a second resting position and a second cocked position;

a front spring member positioned within said forward region of said housing and biasing said forward carrier forwardly toward said second resting position; and

a forward retaining member configured to releasably retain said forward carrier in the cocked position, said forward retaining member releasable in response to said rearward carrier moving from the first cocked position to the first resting position; and

a two stage cocking assembly for moving one of said carriers to the corresponding cocked position with a first actuation of said cocking assembly and then moving the other of said carriers to the corresponding cocked position with a second actuation of said cocking assembly, the cocking assembly having

a cocking lever disposed externally on a lever wall of said housing;

a force transmission assembly including a forward cocking beam pivotally attached to said forward end of said housing and an opposite end, a rearward cocking beam having a first end and an opposite end, and a beam bearing engaged to said opposite ends of said forward cocking beam and said rearward cocking beam, each of said cocking beams forming an angle with said lever wall of said housing, said beam bearing movable against said cocking lever between a lever open position with the cocking beams in a retracted position and a lever closed position with the cocking beams in an extended position wherein said angle is smaller when said cocking beams

are in the extended position relative to when said cocking beams are in the retracted position;

a cocking slider having a forward end, a rearward end, a center portion, and a beam-cocking slider connector forward of said center portion, said beam-cocking slider connector pivotally engaged to said first end of said rearward beam and movable along a path in response to actuation of said cocking lever, said cocking slider having a length sufficient to span a distance between said forward carrier and said rearward carrier, said cocking slider disposed between said cocking beams and said carriers to transmit force from said beams to said carriers to move said carriers from the corresponding resting position to the corresponding cocked position,

said cocking slider having a forward engagement member releasably engageable to said forward carrier and a rearward engagement member releasably engageable to said rearward carrier,

wherein upon actuation of said cocking lever, said forward end tips toward said forward carrier to align said forward engagement member with said forward carrier when said forward carrier is in said resting position, and alternately, said forward end rests upon said forward slider and said rearward end tips towards said rearward carrier to align said rearward engagement member with said rearward carrier when said forward carrier is in said cocked position.

2. The automatic tissue sampling apparatus of claim 1, wherein said lever wall is disposed between said forward end and said rearward end of said housing and said cocking lever is laterally supported from said lever wall.

3. The automatic tissue sampling apparatus of claim 1, further comprising a trigger operatively engaged to said rearward retaining member and disposed on one of said forward end and said rearward end of said housing, and a safety knob positioned outside one of said forward end and said rearward end, said safety knob positionable to a safety-on position to block operation of said trigger.

4. The automatic tissue sampling apparatus of claim 3 further comprising a lever hook disposed on said cocking lever, a lever latch engageable to said lever hook and extending from said lever wall, said lever latch movable between an engaged position and a released position, and a safety cam movable in response to movement of said safety knob, said safety cam having a major dimension sufficient to block movement of said lever latch from the engaged position to the released position.

5. The automatic tissue sampling apparatus of claim 4 further comprising an elongated lever latch linker positioned parallel to said longitudinal axis and connecting said lever latch to a lever latch pusher disposed in said rearward portion of said housing, said lever latch pusher biased in the forward direction and movable in a rearward direction in response to movement of said rearward carrier to the first cocked position.

6. The automatic tissue sampling apparatus of claim 3 further comprising a second trigger disposed on the other of said forward end and said rearward end of said housing, said trigger and said second trigger operably connected by an elongated trigger linker.

7. The automatic tissue sampling apparatus of claim 4 wherein said safety cam is fixed to said center shaft and said safety knob is operable to rotate said center shaft and said safety cam.

8. The automatic tissue sampling apparatus of claim 7 wherein said safety knob includes a skirt member disposable between said trigger and said one of said forward end and said rearward end to prevent operation of said trigger when said safety knob is in the safety-on position.

9. The automatic tissue sampling apparatus of claim 1 further comprising a stop member fixed to said center shaft, said stop member having a projection facing one of said forward carrier and said rearward carrier and providing an alternate resting position to the one of said forward carrier and said rearward carrier, said alternate resting position selectable by rotating said safety knob.

10. The automatic tissue sampling apparatus of claim 3 further comprising an elliptical member fixed to said center shaft, said elliptical member having a minor dimension configured to allow said cocking slider to contact said forward carrier and said rearward carrier and a major dimension configured to push said cocking slider away from said forward carrier and said rearward carrier, said major dimension of said elliptical member contacting said cocking slider when said safety knob is in a safety-off position.

11. An automatic tissue sampling apparatus for use with a biopsy needle set having an inner needle and an outer cannula, comprising:

a housing having a forward end defining an opening for passage of the inner needle and outer cannula, said housing defining an interior cavity;

a first carrier slidably disposed within said interior cavity of said housing and having a portion configured to support one of the inner needle and the outer cannula;

a second carrier slidably disposed within said interior cavity and having a portion configured to support the other of the inner needle and the outer cannula;

a first driving mechanism disposed within said interior cavity in operable engagement with said first carrier, said first driving mechanism having a cocked position in which said mechanism stores potential energy and a firing position in which said mechanism releases the potential energy to drive said first carrier toward said forward end of said housing;

a second driving mechanism disposed within said interior cavity in operable engagement with said second carrier, said second driving mechanism having a cocked position in which said mechanism stores potential energy and a firing position in which said mechanism releases the potential energy to drive said second carrier toward said forward end of said housing; and

a cocking mechanism operable to sequentially move said first driving mechanism to its cocked position and said second driving mechanism to its cocked position, said cocking mechanism including a manually operated cocking lever positioned outside said housing for single handed manipulation while holding said housing.

12. The automatic tissue sampling apparatus of claim 11, wherein:

said cocking lever is pivotally supported on said housing; and

said cocking mechanism includes;

a cocking slider having an engagement portion, said cocking slider slidably disposed within said housing so that when said cocking slider slides in a rearward direction away from said forward end of said housing said engagement portion applies a force against at least one of said first and second carriers to move the carrier to its cocked position; and

a force transmission mechanism engaged between said cocking lever and said cocking slider and configured to translate pivoting movement of said cocking lever to sliding movement of said cocking slider in said rearward direction against said at least one of said first and second carriers.

13. The automatic tissue sampling apparatus of claim 12, wherein:

cocking slider includes an elongated bar; and

said engagement portion includes a forward engagement member defined at a forward end of said bar arranged to engage said first carrier and a rearward engagement member arranged to engage said second carrier.

14. The automatic tissue sampling apparatus of claim 13, wherein said force transmission mechanism includes a first elongated beam slidably supported at one end by said cocking lever and pivotally connected at an opposite end to said elongated bar.

15. The automatic tissue sampling apparatus of claim 14, wherein said first elongated beam is pivotally connected at a position along the length of said bar of said cocking slider closer to the forward end of said bar than to the rearward end of said bar.

16. The automatic tissue sampling apparatus of claim 14, wherein said force transmission mechanism includes:

a second elongated beam pivotally connected at one end; and

a beam bearing pivotally connecting an opposite end of said second elongated beam to said one end of said first elongated beam, said beam bearing slidably supported by said cocking lever.

17. The automatic tissue sampling apparatus of claim 16, wherein said force transmission mechanism includes a biasing element at said one end of said second elongated beam operable to bias said second elongated beam away from said housing, whereby said second elongated beam pivots said cocking lever away from said housing as said beam pivots away from said housing.

18. The automatic tissue sampling apparatus of claim 13, wherein said forward engagement member defines a hook for engaging said first carrier to pull said first carrier as said cocking slider slides rearward.

19. The automatic tissue sampling apparatus of claim 18, wherein said rearward engagement member defines a notch for engaging said second carrier to push said second carrier as said cocking slider slides rearward.

20. The automatic tissue sampling apparatus of claim 13, wherein said rearward engagement member defines a notch for engaging said second carrier to push said second carrier as said cocking slider slides rearward.

21. An automatic tissue sampling apparatus for use with a biopsy needle set having an inner needle and an outer cannula, comprising:

a housing having a forward end defining an opening for passage of the inner needle and outer cannula, said housing defining an interior cavity;

a first carrier slidably disposed within said interior cavity of said housing and having a portion configured to support one of the inner needle and the outer cannula;

a second carrier slidably disposed within said interior cavity and having a portion configured to support the other of the inner needle and the outer cannula;

a first driving mechanism disposed within said interior cavity in operable engagement with said first carrier, said first driving mechanism including a first spring compressible to a cocked position to store potential energy and releasable from said cocked position to release the potential energy to drive said first carrier toward said forward end of said housing;

a second driving mechanism disposed within said interior cavity in operable engagement with said second carrier, said second driving mechanism including a second spring compressible to a cocked position to store potential energy and releasable from said cocked position to release the potential energy to drive said second carrier toward said forward end of said housing; and

a cocking mechanism operable to compress said first spring, said cocking mechanism including;

a cocking lever positioned outside said housing and pivotally mounted to said housing to be manually depressed against the housing; and

a force transmission mechanism operably coupled between said cocking lever and said first carrier and configured so that the force required

to manually depress said cocking lever to compress said first spring does not increase as said first spring is compressed.

22. The automatic tissue sampling apparatus of claim 21, wherein:

said cocking mechanism includes a cocking slider having an engagement portion, said cocking slider slidably disposed within said housing so that when said cocking slider slides in a rearward direction away from said forward end of said housing said engagement portion applies a force against said first carrier to move the carrier rearward; and

said force transmission mechanism includes;

a first elongated beam slidably supported at one end by said cocking lever and pivotally connected at an opposite end to said elongated bar;

a second elongated beam pivotally connected at one end to said housing; and

a beam bearing pivotally connecting an opposite end of said second elongated beam to said one end of said first elongated beam, said beam bearing slidably supported by said cocking lever.